

Abstract

Digital workflows in dentistry and in dental implantology

P.-C. Pott^{1,*}, T. Doll² and M. Stiesch¹

¹ Department of Prosthetic Dentistry and Biomedical Materials Research, Hannover Medical School, Hannover, Germany

² Department of Otolaryngology, Hannover Medical School, Hannover, Germany

* Corresponding author, email: Pott.Philipp-Cornelius@mh-hannover.de

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Digital workflow is an integral part of reconstructive dentistry [1, 2]. Modern intraoral scanners are capable of producing high-resolution 3D data sets as a basis for additive or subtractive CAD/CAM manufacturing of high-precision restorations made of ceramics, plastics or metals within a short time [3, 4]. Today, composite-based direct and indirect restorative materials can be stably polymerized to many solid surfaces with suitable bonding systems [5, 6]. Digital processes also play an important role in planning the ideal dental implants position based on three-dimensional data sets, as well as in the CAD/CAM-supported fabrication of various templates [7]. Following the example of reconstructive facial surgery, 3D-printed patient-specific implants enable the treatment of dental indications in which conventional implants reach their limitation ranges [8]. There are also approaches to use robots in dental implantology. A robot in a predefined position with the aid of navigation systems anchored in the bone has already implanted the first standard implants [9]. The stability of the implant is particularly important for long-term successful implant restoration from the beginning. In immediate implant placements, the bone volume has not yet changed after tooth extraction. Placing an implant in this extraction socket immediately results in a shape mismatch between the shape of the bone and the outer contour of the implant. This incongruence leads to reduced primary stability of the implant due to the lack of contact surface between the implant and the bone. The aim of this presentation is to highlight the status of the application areas of digital process chains and to present ideas for further indication areas.

AUTHOR'S STATEMENT

Conflict of interest: Authors state no conflict of interest. Animal models: N/A, Informed consent: N/A, Ethical approval: N/A

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